

In the Specification:

On page 1, after the title, please replace the heading "Description" with the following heading --BACKGROUND OF THE INVENTION--.

On page 1, before the first paragraph beginning at line 11, please insert the heading --Field of the Invention--.

On page 1, before the second paragraph beginning at line 18, please insert the heading --Description of Prior Art--.

On page 1, delete the paragraph starting with line 26 and replace it with the following paragraph:

A Hall sensor array in which two or four Hall sensor elements are used to compensate the disturbing effect of a particular crystal direction is known from the European patent specification EP-0548391 B1. The angular separation of the individual Hall sensor elements is fixed, lying between 0° and 180°. The angle is chosen according to the crystal direction of the semiconductor material which is used. According to EP-0548391 each Hall element is fed from a separate current source, so that a constant current is impressed on each element. The Hall voltages tapped off at the individual Hall elements in the Hall detector are connected in parallel in a switching stage. A common value is thus imposed on the Hall voltages of the individual elements, so that compensating currents may result.

On page 3, please delete the three paragraphs starting at line 5 and ending at line 33 and insert the following heading and text:

SUMMARY OF THE INVENTION

It is the object of the present invention to provide an improved Hall sensor array which is also less complicated to manufacture.

This object is achieved by a Hall sensor array comprising:

a first and at least one additional pair of Hall sensor elements,

wherein each Hall sensor element has four terminals, of which two terminals act as power supply terminals for supplying an operating current and two terminals act as measurement terminals for measuring a Hall voltage,

wherein the Hall sensor elements are so arranged that the current directions of the operating current in the two Hall sensor elements of each pair are offset at an angle of approximately 90° to one another,

wherein the Hall sensor elements of the additional pair(s) are so arranged that their current directions of the operating current are offset at an angle of approximately $90^\circ/n$ to the current directions of the operating current of the first pair of Hall sensor elements, n being the total number of Hall sensor element pairs, and

wherein respective first terminals of the measurement terminals of the Hall sensor elements and respective second terminals of the measurement terminals of the Hall sensor elements are connected together for measurement of the Hall voltage,

wherein the Hall sensor array also has switches and wherein the respective terminals of the Hall sensor elements are connected to the switches, so that the respective first and second supply terminals for supplying an operating current and the respective first and second measurement terminals for measuring a Hall voltage can be switched over from one

measurement to a subsequent measurement in such a way that the current directions of the operating current in the Hall sensor elements and the Hall voltage tapping directions can be rotated through approximately 90° from one measurement to a subsequent measurement,

wherein the Hall sensor array also has a controller by means of which the switches are controllable in such a way that the Hall sensor array is operable in spinning current operation for generating a Hall signal and wherein the offset voltages of the Hall sensor elements approximately cancel one another out in a revolution so that the Hall signal contributions which actually depend on the magnetic field remain, and

wherein respective first supply terminals of each Hall sensor element are connected together and to a first terminal of a common voltage source and respective second supply terminals of each Hall sensor element are connected together and to the second terminal of the common voltage source so that the common voltage source supplies an operating current for the Hall sensor elements.

On page 4, please amend the paragraph beginning at line 13 and ending at line 29 as follows:

According to the present invention, ~~The geometric arrangement and interwiring of the Hall sensor elements are operated in~~ according to the present invention is particularly important for the so-called "spinning current" ~~operation mode~~. In spinning current operation the measurement direction is rotated continuously in a cycle by e.g. 90° at a particular clock frequency, i.e. the operating current flows from one electrode to the facing contact electrode, the Hall voltage being tapped off at the transverse contact electrodes, whereupon the measurement direction is rotated through 90° at the next cycle, i.e. the next measurement phase. The Hall voltages measured in the individual measurement phases are evaluated by a

suitable correctly signed and weighted summation or subtraction. The offset still contained in the individual measurement phases can be reduced still further or the offset voltages during a revolution should roughly cancel one another out, so that the parts of the Hall signal which really depend on the magnetic field are retained.

On page 6, before line 1, insert the heading --BRIEF DESCRIPTION OF THE DRAWINGS--.

On page 6, before line 19, insert the heading --DESCRIPTION OF THE PREFERRED EMBODIMENTS OF THE INVENTION--.